

REMARKS/ARGUMENTS

Claims 1-17 were previously pending in the application. Claims 1-6 are canceled; claim 12 is amended; and new claims 18-26 are added herein. Assuming the entry of this amendment, claims 7-26 are now pending in the application. The Applicant hereby requests further examination and reconsideration of the application in view of the foregoing amendments and these remarks.

In paragraph 4 of the office action, the Examiner rejected claims 7 and 15-16 under 35 U.S.C. 102(b) as being anticipated by Yoshino. In paragraph 6, the Examiner rejected claims 8, 11, and 17 under 35 U.S.C. 103(a) as being unpatentable over Yoshino in view of Ashi. In paragraph 7, the Examiner rejected claim 10 under 103(a) as being unpatentable over Yoshino in view of Ashi, and further in view of Kim. In paragraph 8, the Examiner rejected claim 12 under 103(a) as being unpatentable over Yoshino. In paragraph 9, the Examiner objected to claims 9 and 13-14 as being dependent upon a rejected base claim, but indicated that those claims would be allowable if rewritten in independent form. For the following reasons, the Applicant submits that all of the now-pending claims are allowable over the cited references.

Claims 7 and 17

According to claim 7, a cell delineation procedure at the protection OSU is initiated during normal, non-ranging operations of the working OSU to enable the protection OSU to correctly delineate upstream cells, and the arrival times of corresponding upstream cells are measured at both the working and protection OSUs, in order to generate a propagation delay value for the protection OSU.

In rejecting claim 7, the Examiner stated that Yoshino teaches the invention of claim 7. In particular, the Examiner stated that Yoshino discloses "initiating a cell delineation procedure at the protection OSU during normal, non-ranging operations of the working OSU," citing column 2, line 65, to column 3, line 28; column 5, lines 39-53; and column 7, lines 1-37. The Applicant respectfully submits that the Examiner mischaracterized the teachings of Yoshino in rejecting claim 7.

Yoshino teaches initiating a cell delineation procedure at a protection OSU during ranging operations of the working OSU, but not during normal, non-ranging operations of the working OSU. In particular, Yoshino teaches, in column 7, lines 1-37, that, in response to receiving "a down signal" from the station equipment, each subscriber equipment transmits "a delay measurement burst signal" to the station equipment, where the delay measurement burst signal comprises a specific preamble "consisting of 8-bit alternating signal, and a frame pattern "10110010" shown in Fig. 4(A)." Clearly, this is a description of special ranging operations of the network during which special downstream and upstream ranging cells are being transmitted between the station and subscriber equipment, not normal, non-ranging operations during which normal user data cells are transmitted between the station and subscriber equipment.

Ranging refers to the process of transmitting special downstream ranging cells from "station equipment" to "subscriber equipment" (using Yoshino's terminology) to prompt the subscriber equipment to transmit special upstream ranging cells back to the station equipment, so that the station equipment can determine the round-trip delay associated with the transmission and processing of the special ranging cells. In order for the station equipment to determine the round-trip delay, conventional ranging operations are performed specifically when normal user data cells are not also being transmitted between the station and subscriber equipment.

According to the invention of claim 7, however, the cell delineation procedure is initiated at the protection OSU during normal, non-ranging operations of the working OSU. Yoshino does not teach or even suggest this feature. In particular, none of the passages in Yoshino cited by the Examiner teach or even suggest this feature. Column 2, line 65, to column 3, line 28, of Yoshino describes how propagation delay values are generated for the protection OSU, but there is no teaching or even suggestion that this procedure is performed other than during prior-art special ranging operations. Similarly, column 5, lines 39-53, of Yoshino provides similar teachings that do not disclose or even suggest anything but special ranging operations. As described above, column 7, lines 1-37, of Yoshino explicitly teaches that the processing is performed during special ranging operations using special downstream and upstream ranging cells, not during normal, non-ranging operations when normal user data cells are being transmitted.

Significantly, on page 7, the Examiner admitted that Yoshino "does not disclose that the optical network uses upstream PLOAM cells not associated with ranging."

The invention enables the propagation delay value for the protection OSU to be generated without interrupting normal data operations of the network. Moreover, the invention enables the propagation delay value for a protection OSU to be generated in a network where the protection OSU is added to the network after conventional ranging operations have been completed and after the network has already been operating in its normal data transmission mode. The special ranging operations taught by Yoshino do not provide such advantages.

For all these reasons, the Applicant submits that claim 1 is allowable over Yoshino.

In rejecting claim 17, the Examiner cited Ashi for the teachings of a machine-readable medium, not for anything having to do with normal, non-ranging operations. As such, the Applicant submits that, for the same reasons that claim 7 is allowable, claim 17 is also allowable. Since the rest of the claims depend variously from claims 7 and 17, it is further submitted that those claims are also allowable.

Claims 10 and 20

According to claims 10 and 20, the corresponding upstream cells are upstream PLOAM cells that are not associated with ranging by the working OSU. In rejecting claim 10, as mentioned before, the Examiner admitted that Yoshino "does not disclose that the optical network uses upstream PLOAM cells not associated with ranging." Rather, the Examiner cited Kim as providing the teachings missing from Yoshino and Ashi. In particular, the Examiner stated that Kim discloses "that within an ATM frame, PLOAM cells are used for Operation and Maintenance in an ATM-PON, thus inherently used during non-ranging operations."

The Applicant readily admits that PLOAM cells existed before the present invention and that they are used for Operation and Maintenance during non-ranging operations. But that has nothing to do with the present invention. According to claim 10, the corresponding upstream cells recited in claim 7 are upstream PLOAM cells that are not associated with ranging by the working OSU, where these corresponding upstream cells are used to generate the propagation delay value for the protection OSU. Generation of propagation delay values is not part of conventional "Operation and Maintenance during non-ranging operations" as that phrase is known in the art. Rather, in the prior art, the generation of propagation delay values was limited to special ranging operations. Simply citing a reference like Kim that teaches that PLOAM cells existed in the prior art is far from a teaching or even suggestion of the use of such PLOAM cells to generate propagation delay values for protection OSUs during normal, non-ranging operations, something they were never intended to be used for.

Thus, the Applicant submits that this provides additional reasons for the allowability of claims 10 and 20 over the cited references.

Claims 12 and 22

Claim 12 has been amended to clarify that the protection OSU is added to the optical network after the working OSU has completed ranging for the one or more ONTs. New claim 22 recites a similar feature. As described earlier, the present invention enables the propagation delay value for a protection OSU to be generated without interrupting normal network data operations, when the protection OSU has been added to the network after the working OSU has completed its ranging operations. In rejecting claim 12, the Examiner admitted that Yoshino "does not disclose that the protection OSU is configured into the optical network after ranging." Nevertheless, the Examiner stated that this would be obvious "if Yoshino discloses initial ranging for an unprotected OSU and discloses a propagation delay calculation procedure for a protection OSU initiated during normal, non-ranging operations of a working OSU."

However, as described previously, Yoshino does not disclose these features. Specifically, Yoshino does not teach "initial ranging for an unprotected OSU." Significantly, the Examiner provides no citations to any passages in Yoshino in support of this statement. Nor does Yoshino disclose "a propagation delay calculation procedure for a protection OSU initiated during normal, non-ranging operations of a working OSU." Rather, as described earlier, Yoshino teaches a propagation delay calculation procedure only during special ranging operations. Since the Examiner's premises are inaccurate, his conclusion that claim 12 is obvious is not proper.

The Applicant submits that this provides additional reasons for the allowability of claims 12 and 22 over the cited references.

For all these reasons, the Applicant submits that the rejections of claims under Sections 102(b) and 103(a) have been overcome.

In view of the above amendments and remarks, the Applicant believes that the now-pending claims are in condition for allowance. Therefore, the Applicant believes that the entire application is now in condition for allowance, and early and favorable action is respectfully solicited.

Respectfully submitted,



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